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(54) Title: DUAL POROSITY FILTER

(57) **Abstract:** Disclosed is a method and a filter unit for depleting or enriching a liquid or gas with substance(s) comprising i) providing a filter unit comprising at least one convective layer and at least one receiving layer adjacent one another, ii) passing the liquid or gas through the filter so that the main direction of flow is along the layers and the main flow of liquid/gas is in the convective layer, allowing the substance(s) to: a) be transferred from a convective layer to a receiving layer, and b) be retained or otherwise modified or transferred within a receiving layer, or c) be provided by the receiving layer, and d) be transferred from the receiving layer to the fluid in the convective layer. The filter unit according to the present invention works by diffusion, sedimentation, and mixing-zone mass flow in combination with sorption or any other retention or depletion mechanism e.g. adsorption, absorption, precipitation, straining, sedimentation, degradation, chemical modification, and enriching or other feeding mechanisms, e.g. dissolution, biological productions, chemical reaction productions. It is one object of the invention to provide a filter unit having a high and from the filtering material independently determined hydraulic capacity during the whole lifetime of the filter and yet providing good and flexible conditions for exchange of substance(s), e.g. combating pollutants in wastewater. The filter unit can be used for treatment of any fluid, preferred is where huge amounts of fluid have to be filtered per time unit, and/or where the fluid contains alternating concentrations of substances to be depleted, such as storm water runoff (urban, highway and other road runoff), combined sewer overflow, effluent from wastewater treatment plants, groundwater, surface water (lake, rivers, stream), industrial wastewater, but the filter unit can also be used for enriching fluids with substances, preferred is where huge amounts of fluid have to be enriched per unit time, or where the enrichment has to be combined with a depletion, such as removal of a suspended solid, and addition of a micro-organism.

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